AMENDMENT TO THE CLAIMS:

Please amend claims 1, 8, 10 and 15 as follows:

1. (Currently amended) A method for processing data to provide a forewarning of a critical event, comprising:

acquiring a plurality of sets of data for a plurality of channels of data ~~for~~ from monitoring at least one physical test subject or physical process;

calculating a set of channel data for a selected parameter from the plurality of channels of data representing parameters that are calculated to provide the selected parameter;

computing a renormalized measure of dissimilarity from distribution functions derived from a phase space for ~~the~~ a selected channel of data;

comparing said renormalized measure of dissimilarity to a threshold (U_C) for a number of occurrences (N_{OCC}) to indicate a condition change in said renormalized measure of dissimilarity; and

detecting a simultaneous condition change in a plurality (N_{SIM}) of renormalized measures of dissimilarity to determine a forewarning of the critical event; and

providing an output of at least one of a graph, a table of data or an observable signal by which a human observer can detect the forewarning of the critical event.

2. (Original) The method of claim 1, wherein the test subject is a human patient.

3. (Original) The method of claim 1, wherein the test subject is a mechanical device or physical process.

4. (Previously presented) The method of claim 1, wherein the selected parameter is three-phase electrical power.

5. (Previously presented) The method of claim 1, wherein the selected parameter is vibration mechanical power.

6. (Previously presented) The method of claim 1, wherein the selected parameter is a difference between two channels of EEG data.

7. (Original) The method of claim 1, further comprising:

performing a first filtering of each set of data with a zero-phase quadratic filter that filters out high-frequency artifacts; and

performing a second filtering of each set of data with a zero-phase quadratic filter to filter out low-frequency artifacts.

8. (Currently amended) The method of claim 1, further comprising:

sorting the data values into ascending order from a minimum to a maximum;

determining the number of unique ~~signal~~ values (n) and the corresponding relative occurrence frequency (F_k) for each unique ~~signal~~ value (v_k);

displaying a graph of frequency (F_k) versus values (v_k) in each bin in a connected phase space; and

discarding data that has $[v_k - (N/n)]/\sigma_3 > z$, where the value of z is determined by solving $1/n = ½\ \mathrm{erfc}(z/\sqrt{2})$, and σ_3 is the standard deviation in the occurrence frequency.

9. (Original) The method of claim 1, with an alternative embodiment for event forewarning, comprising determining a sequence of renormalized phase space dissimilarity measures from data sets for the test subject or process; summing said renormalized measures into a composite measure, C_i, for the i-th data set; performing a least-squares analysis over a window of m points of the said composite measure to obtain a straight line, $y_i=ai+b$, that best fits said composite data in a least-squares sense; determining the variance, $\sigma_1^2 = \Sigma_i\ (y_i - C_i)^2/(m-1)$, of said

composite measure with respect to the straight line fit; obtaining the variability of the sequel window of *m* sequential points via the statistic, $G = \Sigma_i\ (y_i - C_i)^2/\sigma_1^2$; comparing said value of G to the running maximum value of the same statistic, G_{max}; determining the forewarning of or failure onset of a critical event (such as a machine failure), when G is significantly more than G_{max}; obtaining the ratio, $R = (G_{max})_k/(G_{max})_{k-1}$, of the present and previous running maximum in *G*; and determining the forewarning of a critical event when *R* is significantly more than some limit.

10. (Previously presented) A method for processing data to provide a forewarning of a critical event, comprising:

acquiring a plurality of sets of data for at least two channels of data ~~for~~ from monitoring at least one physical test subject or physical process;

producing a set of multi-channel data representing a combination of said at least two channels of data;

computing a multi-channel time-delay phase-space (PS) construction, which has the form: $y(i) = [s(1)_i,\ s(1)_{i+\lambda},\ s(1)_{i+2\lambda}, \ldots,\ s(2),\ s(2)_{i+\lambda},\ s(2)_{i+2\lambda},\ \ldots,\ s(c)_i,\ s(c)_{i+\lambda},\ s(c)_{i+2\lambda},\ \ldots]$, where $s(c)$ denotes the symbolized data for *c*-th channel;

computing a renormalized measure of dissimilarity from distribution functions derived from the phase space for the multi-channel data;

comparing said renormalized measure of dissimilarity to a threshold (U_C) for a number of occurrences (N_{OCC}) to indicate a condition change in said renormalized measure of dissimilarity; and

detecting a simultaneous condition change in a plurality (N_{SIM}) of renormalized measures of dissimilarity to determine a forewarning of the critical event; and

providing an output of at least one of a graph, a table of data or an observable signal by which a human observer can detect the forewarning of the critical event.

QBMKE\5967548.1

11. (Original) The method of claim 10, further comprising:

performing a first filtering of each set of data with a zero-phase quadratic filter that filters out high-frequency artifacts; and

performing a second filtering of each set of data with a zero-phase quadratic filter to filter out low-frequency artifacts.

12. (Original) The method of claim 10, using an alternative embodiment for event forewarning, comprising determining a sequence of renormalized phase space dissimilarity measures from data sets collected during increasingly severe fault conditions; summing said renormalized measures into a composite measure, C_i, for the *i*-th data set; performing a least-squares analysis over a window of *m* points of the said composite measure to obtain a straight line, $y_i=ai+b$, that best fits said composite data in a least-squares sense; determining the variance, $\sigma_1^2 = \Sigma_i (y_i - C_i)^2/(m-1)$, of said composite measure with respect to the straight line fit; obtaining the variability of a sequel window of *m* sequential points via the statistic, $G = \Sigma_i (y_i - C_i)^2/\sigma_1^2$; comparing said value of G to the running maximum value of the same statistic, G_{max}; and determining the onset of a critical event, such as forewarning of a machine failure, when G is significantly more than G(non-end-of-life), or when *R* is significantly more than *R*(non-end-of-life), or detection of failure onset when *G* is significantly greater than *G*(end-of-life).

13. (Original) The method of claim 10, wherein the test subject is a human patient.

14. (Original) The method of claim 10, wherein the test subject is a mechanical device or physical process.

15. (Currently amended) The method of claim 10, further comprising:

sorting the data values into ascending order from a minimum to a maximum;

determining the number of unique ~~signal~~ values (n) and the corresponding relative occurrence frequency (F_k) for each unique ~~signal~~ value (v_k);

displaying a graph of frequency (F_k) versus values (v_k) in each bin in a connected phase space; and

discarding data that has $[v_k - (N/n)]/\sigma_3 > z$, where the value of z is determined by solving $1/n = ½ \operatorname{erfc}(z/\sqrt{2})$, and σ_3 is the standard deviation in the occurrence frequency.

16. (Previously presented) The method of claim 10, wherein the multi-channel time-delay phase-space (PS) construction is constructed from process-indicative data, which is three-phase electrical power data.

17. (Previously presented) The method of claim 10, wherein the multi-channel time-delay phase-space (PS) construction is constructed from process-indicative data, which is vibration mechanical power data.

18. (Previously presented) The method of claim 10, wherein the multi-channel time-delay phase-space (PS) construction is constructed from process-indicative data representing a difference between the two channels of data, which is EEG data.